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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,602	10/24/2003	Charlene W. Bayer	GTRC183	6490
6980	7590	03/13/2007		
TROUTMAN SANDERS LLP 600 PEACHTREE STREET, NE ATLANTA, GA 30308			EXAMINER DRODGE, JOSEPH W	
			ART UNIT 1723	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/13/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/693,602	<b>Applicant(s)</b> BAYER ET AL.	
	<b>Examiner</b> Joseph W. Drodge	<b>Art Unit</b> 1723	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-12, 15-18, 20-22, 24 and 33-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-12, 15-18, 20-22, 24 and 33-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0105</u> . | 6) <input type="checkbox"/> Other: _____  |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3,5,11,15,16,34-36,38,41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al patent 3,538,020, of record. For the independent claims, ***Heskett discloses a gas filter (column 1, lines 58-66) for adsorbing contaminants (column 2, lines 21-24 denote the structure as***

***comprising ion-exchange resin, activated charcoal and/or greensand, all of which have adsorption properties, particularly the ion exchange material), the structure also including a polymer matrix having particle entrapping properties (column 2, line 68-column 3, line 64) and reactive additives (column 2, lines 21-30). He also discloses that the ion exchange material generally has relatively small particle sizes and hence relatively large surface area for sorption (column 4, lines 3-18).***

***Heskett is silent as to specific capacity of adsorption, thus silent as to whether the media utilized has the claimed absorption capacity claimed ('at least about 0.01 gram of captured contaminants per gram of the absorptive system'); however it is obvious to the skilled artisan that the varied polymers (column 3, lines 55-58 and adsorption additives (disclosed in column 3, line 72-column 4, line 23) have a wide range of capacity, including the claimed range of sorption capacity, depending upon specific gas being treated and specific types of contaminants removed. Such is particularly obvious since the disclosed sorbents overlap the specific sorbents recited in the instant specification at pages 11 and 12 (polyvinyl polymers, polypropylene glycol, etc.).*** Similarly for claims 2 and 36, the polymer diffusivity obviously varies over a wide range since column 3, lines 55-58 state that a range of diverse polymer combinations may be employed. For claim 3, polydimethylsiloxane is disclosed at column 4, lines 55-57. For claims 5 and 38, the additives at least comprise water (see column 6, lines 25-27). For claim 11, the additives may be uniformly distributed (column 5, lines 54-55). For claim 15, non-reactive additives such as cross-linking agents are disclosed at column 7, lines 66-68).

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For claims 16 and 41, water may constitute such non-reactive additive, when it is used to pre-shape the polymer (column 6, lines 44-48). For claim 45, see housing, such as a "filter cartridge" at column 11, lines 1,40 etc.

Claims 4 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al as applied to claims 1-3,35 and 36 above, and further in view of Kusanose et al patent 3,936,394. Claims 4 and 37 additionally require polyacrylamide polymer. Kusanose (column 4, lines 28-48) and (column 2, lines 22-32) teach polyacrylamide or similar polymers in a gas adsorption filter. It would have been obvious to have employed a polymer such as polyacrylamide in the Heskett device/method to adsorb a rich variety of different substances and contaminants.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al as applied to claims 1 and 5 above, and further in view of Hirata et al patent 6,352,579. Claim 8 requires a sulfonic acid additive. Hirata teach at column 5, lines 62-65 to include sulfonic acid for the purpose of providing a cation exchange group.

Claims 7, 9,12,18,20-22,24,33, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al as applied to claims 1 and 5 above, and further in view of Kusanose et al.

Claims 7 and 9 additionally require one of additives to comprise an amine. Kusanose teach including an amine at column , lines for the purpose of .

Claim 12 requires the additives to form a layer in contact with but separate from a polymer matrix. Such structure is taught by Kusanose at column 11, lines 57-67 so as to form a laminate structure having ability to withstand fluid pressure and tensile stress.

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Claims 18,20-22,24 and 42-44 require a substrate. Kusanose teach to use a substrate in a gas adsorption filter at column 11, line 55-column 12, line 34 to provide support for the adsorption matrix and form a laminate structure having ability to withstand fluid pressure and tensile stress. The substrate may be a polyamide, a cellulosic material or other of the polymers listed in claims 20,21,43 and 44, see Kusanose at column 12, lines 6-12. Heskett disclose to house the adsorption filter in a cartridge at column 11, lines 1 and 40 for claim 22.

For claim 33, Kusanose also teach at column 2, lines 43-44 and column 9, lines 18-23 that an adsorption filter may also remove biological contaminants by using materials having biostat properties.

Claims 10 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al as applied to claims 1-3,5 and 35 and further in view of Koper et al patent 6,057,488. Koper et al teach at column 2, lines 21-52, etc.to include nanoparticles in a system for filtering or adsorbing contaminants from a fluid, since nanostructured adsorbents can be tailored to adsorb a wide variety of biological and chemical agents.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heskett et al as applied to claim 1, and further in view of Hirata et al patent 6,352,579 and Kusanose et al patent 3,936,394. Claim 17 additionally requires polyacrylamide polymer. Kusanose (column 4, lines 28-48) and (column 2, lines 22-32) teach polyacrylamide or similar polymers in a gas adsorption filter. It would have been

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obvious to have employed a polymer such as polyacrylamide in the Heskett device/method to adsorb a rich variety of different substances and contaminants.

Claim 17 also requires a sulfonic acid additive. Hirata teach at column 5, lines 62-65 to include sulfonic acid for the purpose of providing a cation exchange group.

Applicant's arguments filed February 1, 2007 have been fully considered but they are not persuasive. It is argued that Heskett and other prior art utilizes adsorption media for which the rate of sorption decreases over time, due to decreasing available surface area for adsorption and use of adsorption instead of absorption. However, the claims do not contain any limitation concerning type(s) of sorption utilized or relative loading capacity over a time period.

It is argued that neither Heskett, nor the teaching references providing a combination of adsorption and absorption processes. However, again such combination of characteristics/properties or process is not claimed. Further it is submitted that Heskett discloses combination of varied types of sorbing materials, specifically combination of polymers having particle entrapping characteristics plus inorganic substances with sorption qualities including ion-exchange resin, activated charcoal and greensand.

It is argued that Heskett does not specifically teach sorption capacity of at least about 0.01 gram of contaminant per gram of sorptive system. However, Heskett discloses similar sorption polymers to those disclosed in the instant Specification including polyolefin glycol and polyvinyl polymers.

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin, can be reached at 571-272-1189. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

March 11, 2007

*Joseph Drodge*  
*Primary Examiner*